



Original Communication

A retrospective review of homicides in Mangalore, South India

Akshat Vij MBBS (Intern)^a, Anand Menon MBBS, MD (Professor and Head)^{b,*},
Ritesh G. Menezes MD, DNB (Associate Professor)^b, Tanuj Kanchan DFM, MD (Assistant Professor)^b,
Prateek Rastogi MBBS, MD (Associate Professor)^b

^a Kasturba Medical College (Affiliated to Manipal University), Mangalore, India

^b Department of Forensic Medicine and Toxicology, Kasturba Medical College (Affiliated to Manipal University), Mangalore, India

ARTICLE INFO

Article history:

Received 8 April 2009

Received in revised form

29 December 2009

Accepted 1 April 2010

Keywords:

Homicide

Head injury

Assault

Physical assault

Battery

ABSTRACT

A five-year retrospective study of homicides was carried out to determine the profile of victims and the pattern of injuries sustained between 2001 and 2005 at Government District Wenlock Hospital, Mangalore, South India. Of the 89 victims of homicide, 71 were males and 18 were females. On an average, about 17 cases of fatal assault cases were autopsied each year. The commonest age group affected was the 21–30 age group (28.1%). The head was found to be the most common site of injury followed by the extremities, abdomen and chest. In 49.4% of the cases, the victims had sustained sharp force injuries while in 34.8% blunt force injuries were present. Fatal injuries to the head were the commonest cause of death. Homicide by strangulation was seen in 8 cases and involved mostly women. The incidence of homicidal burns was low ($n = 2$, 2.2%). In 61.8% of the cases, death was immediate. In 52.8% of the cases the assailant(s) had a pre-planned motive for killing.

© 2010 Elsevier Ltd and Faculty of Forensic and Legal Medicine. All rights reserved.

1. Introduction

Homicide is an undesirable facet of the civilized society.¹ Medical examiners have long recognized homicide-related trauma as one of the major public health problems of the world. In India, the medical profession has taken its time in addressing assault-related trauma as a public health problem. Compared to other forms of violence, relatively little attention has been focused on homicide despite its consequences in society. Homicide is the destruction of human life by the act, agency, procurement or culpable omission by some other person(s). It may be lawful or unlawful. Lawful homicide is categorized as justifiable and excusable. According to the Indian Penal Code, unlawful homicide is dealt with under sections 299 to 304.²

The pattern of homicides varies from country to country and is influenced by many factors.^{3–6} These factors include method of killing depending on the availability of weapons as well as cultural influences which include family relationships, religious attitudes, criminal activity, drug culture, alcoholism and social, moral and political factors. The present study is an attempt to study the pattern of homicides and profile of victims in Mangalore, South India.

2. Materials and methods

The present study is a retrospective analysis of 89 cases of fatal assault cases which were autopsied at the Government District Wenlock Hospital, Mangalore between January 2001 and December 2005. Data were collected from the autopsy reports, hospital records, police history and from the legal heirs of the victims. From the available data the victim profile was made. Different variables like methods and circumstances of assault, weapons used, type and site of injury, cause of death and the duration of survival were analyzed.

3. Results

Males comprised 79.8% of the victims ($n = 71$) while females comprised 20.2% of the victims ($n = 18$). The youngest victim was a newborn female, a victim of ligature strangulation while the oldest was an 86-year-old male who was assaulted by sharp weapons. More than 75% of the victims were aged between 20 and 50 years. The most affected age group was between 21 and 30 years, ($n = 25$, 28.08%). The age distribution of the victims is shown in Fig. 1.

Injuries due to sharp force trauma ($n = 44$, 49.4%) were most commonly encountered in the present study, followed by injuries due to blunt force trauma ($n = 31$, 34.8%). Males were more commonly victims of both blunt and sharp force trauma. The peak age incidence of the victims due to both sharp and blunt trauma was in the third decade. Deaths due to strangulation were seen in 8

* Corresponding author. Tel.: +91 9845216092.

E-mail address: anandski@rediffmail.com (A. Menon).

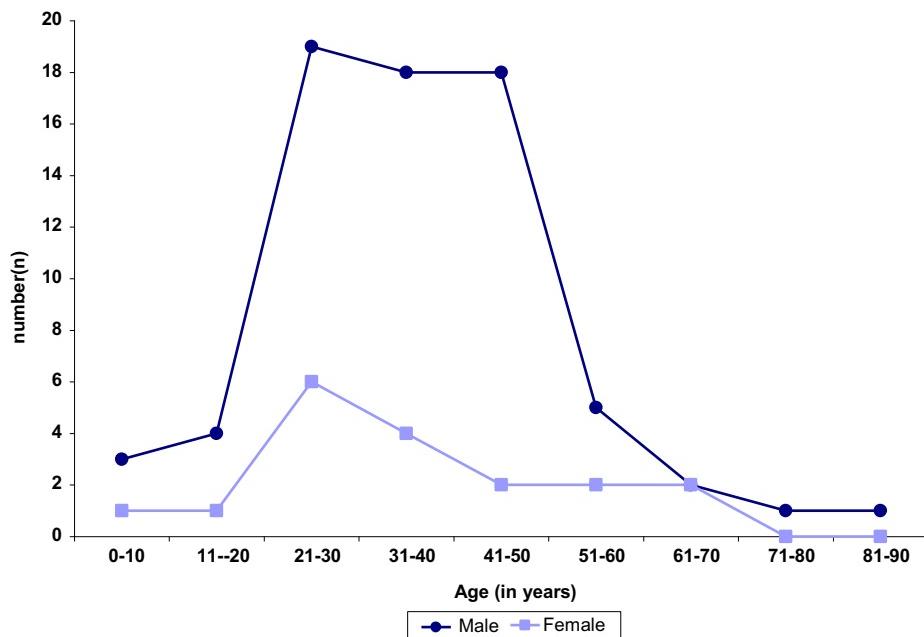


Fig. 1. Age distribution of the assault victims.

cases of which 7 were women, whereas gunshot injuries and homicidal burns were seen only in 2 cases each (Table 1). Distribution of type of injuries sustained in sharp and blunt force assault is presented in Figs. 2 and 3 respectively.

The head was the commonest site ($n = 54$, 22.4%) for both blunt as well as sharp trauma, followed by the extremities, abdomen and the chest. In 55 cases (61.8%) the victims succumbed to their injuries immediately while 13 victims (14.6%) died during the first 24 h. Twelve victims (13.5%) died between 48 h and 5 days. Hospitalization and subsequent surgical intervention were done on 34 (38.2%) of the victims. The major cause of death was head injury in 35 cases (39.32%) followed by hemorrhage in 23 cases (25.8%). Thoraco-abdominal injuries were observed in 20 cases (22.5%) while deaths due to strangulation were seen in 8 cases. Septicemia resulting from the injuries was seen in 2 of the hospitalized cases of burns and in 1 case of treated sharp force trauma (Table 2). Defense injuries were present in 20 victims of homicide. In 10 victims defense injuries were present on both hands and forearms. In 6 victims these were present only on the palms and fingers, whereas in 4 other victims these were present on the forearms. In pre-planned homicides the incidence of defense injuries was less common ($n = 6$) among which, all involved a single assailant.

Assault was pre-planned in 52.8% of the cases ($n = 47$) while in 43.8% of cases ($n = 39$), the assault took place spontaneously during heated arguments between the assailant and the victim. In 3 cases (3.4%) death occurred as a result of unintentional trauma sustained to a third person during the fight (Table 3). Postmortem toxicology of blood revealed presence of alcohol in 2 victims of assault. As per the

inquest, both the victims initiated argument under the influence of alcohol which in turn resulted in them being fatally assaulted.

4. Discussion

The incidence of homicide is increasing every year. It comprised of 5.30% of all autopsies per year during 1977–1980 and increased to 8.96% during 1988–1991 as per the data obtained from the Medical Records Department of the Government District Wenlock Hospital, Mangalore. The rising trend may be attributed to increasing population, unemployment, industrialization, easy availability of weapons, changing life styles and stressful living conditions. Although the methodology of homicide differs from nation to nation, the pattern of homicide in any particular geographical locality is surprisingly stereotyped. For example in the United States, firearms are the most common weapons of assault. This is in contrast with the South Asian countries like India where the most preferred choices are blunt and sharp force trauma.^{8,9} Likewise in India, it is seen that there are also urban and rural differences in the pattern of homicides in different states.^{9,10}

Most of the victims were males as compared to females which are consistent with earlier studies.^{7–10} This is due to the increased exposure of males to the external environment leading to more frequent physical confrontation. Maximum homicide victims were in their third decade which was consistent with the findings of

Table 1
Agents/weapon of assault.

Victim	Males (n, %)	Females (n, %)	Total (n, %)
Sharp	38, 53.5	06, 33.3	44, 49.4
Blunt	28, 39.5	03, 16.7	31, 34.8
Firearms	02, 2.8	00, –	02, 2.3
Blunt + Sharp	02, 2.8	00, –	02, 2.3
Others ^a	01, 1.4	09, 50.0	10, 11.2
Total	71, 100	18, 100	89, 100

^a Ligature/manual strangulation and thermal agents.

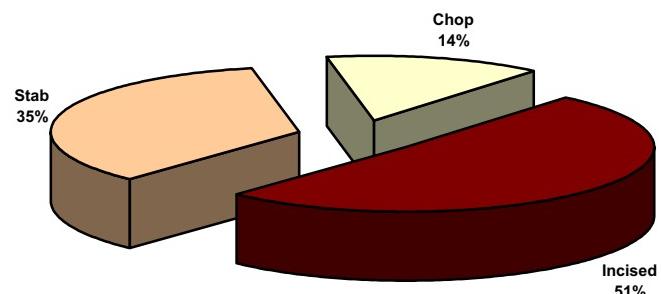


Fig. 2. Injuries in sharp force trauma.

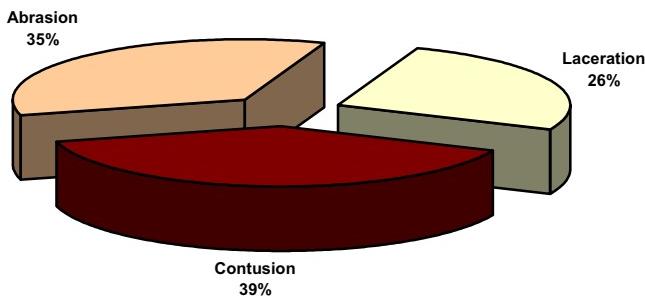


Fig. 3. Injuries in blunt trauma.

other studies.^{11–13} Most of the victims were between 30 and 50 years which was similar to another study from South India.⁹

Injuries due to sharp trauma (49.4%) were the commonest type of injuries encountered in the present study followed by injuries due to blunt trauma (34.8%). Similar findings are reported in the study conducted by Ghangale et al.¹³ The head was most commonly involved in both blunt as well as sharp force trauma which was followed by injuries to the extremities, abdomen and chest. Detailed analysis of the individual injuries could not be done owing to the retrospective nature of the study.

Most of the cases showed multiple injuries indicating the criminal intent of the assailants. The other reason for the presence of multiple injuries was that in most cases, there was more than one assailant present. Twenty cases (22.47%) showed the presence of defense wounds. This was slightly less than that observed by Mohanty et al. in their study.¹⁴ The assailants, in most of the cases came with a pre-planned intent to kill the victim; and more than one assailant were involved in most of the cases. This could explain the lower incidence of defense wounds as the victims were probably caught unaware and didn't get a chance to defend themselves. Head injury was seen to be the most common cause of death in homicidal victims followed by hemorrhage secondary to injury to

Table 3
Circumstances of assault.

Victim	Frequency (n)	Percentage (%)
Pre-planned	47	52.8
Others		
In the heat of the moment	39	43.8
3rd party homicide	03	3.4
Total	89	100

major blood vessels or other major organs. Ghangale et al.¹³ have also reported findings consistent with our data.

Two cases of infanticide were reported during the study period. Both these cases involved a female newborn child. However, it should be seen that the number of female feticide cases is much less than in some other parts of the country where female feticide is practiced to such an extent that the male to female sex ratio is markedly altered. According to the census of India 2001, the average national sex ratio (male:female) stands at 1000:933. For every 1000 males number of females varied from 861 in Haryana to 1058 in Kerala. In the state of Karnataka, the male–female ratio was 1000:964, while in the coastal district of Dakshin Kannada (South Canara) where Mangalore is situated number of females was more than 1000 for every 1000 males. The overall reducing sex ratio in India which was evident from previous censuses have led to the enactment of an act by the parliament forbidding pre-natal sex-determination in India. The Pre-Natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act 1994, (the PNDT Act for short) came into being since 1996. The intention of the act was to provide for the regulation of the use of pre-natal diagnostic techniques for the purpose of detecting genetic abnormalities or certain congenital malformations or sex-linked disorders and for the prevention of the misuse of such techniques for the purpose of pre-natal sex-determination leading to female feticide, and for matters connected therewith or incidental thereto.¹⁶ Female feticide is attributed to the prevailing "Dowry System" in which money, property or gold is gifted by the prospective bride's family to the groom's family. This practice is also responsible for the so-called "Dowry death" in which the bride is killed or driven to her death (Suicide) by the groom's family for the purpose of Dowry.¹⁷ No cases of Dowry deaths were present in our present study.

The number of strangulation deaths was quite less when compared to the findings of Srivastava et al.¹⁵ Signs of restraint/struggle were seen in all the cases. Only two cases of homicidal burns were seen and both were females. Firearms were a rare method of homicide as observed in our study which was similar to the observations of Ghangale et al.¹³ However, this is in contrast to earlier studies by Lemard and Hemenway,⁷ Tardiff et al.⁸ and Agnihotri et al.⁹ Firearms are not easy to obtain as are sharp or blunt weapons because of their cost as well as stringent laws. The details about the exact time of assault were not available in many cases but from the available data, most of the assaults took place after 8 PM at night and before 7 AM in the morning.

As far as the circumstances in which the assault took place are concerned, 52.8% cases showed a history of pre-planned assault while 43.8% cases showed that the assault took place when the assailant and the victim were both involved in a heated argument i.e. in the heat of the moment. The incidence was reportedly lower in an earlier study from Jamaica.⁷ Information on the alcohol status of assailants was not available as it is an autopsy based retrospective study. Influence of alcohol thus, could be ascertained only in the victims of assault. Alcohol was detected only in 2 victims of assault. Our findings are not concurrent with the study by Tardiff et al.⁸ where alcohol and drugs were frequently found in the blood and

Table 2
Site of injury, duration of survival and cause of death in the assault cases.

Victim	Frequency (n)	Percentage (%)
Site of injury		
Head	54	22.4
Neck	29	12.1
Thorax	42	17.4
Abdomen	45	18.7
Back	22	9.1
Extremities ^b	49	20.3
Total	241	100
Duration of survival		
Died immediately	55	61.8
Survival period		
<24 h	13	14.6
1–2 days	04	4.5
2–5 days	12	13.5
>5 days	05	5.6
Total	89	100
Cause of death		
Head injury	35	39.3
Hemorrhage	23	25.8
Thoraco-abdominal injury	20	22.5
Asphyxia	08	8.9
Septicemia ^a	03	3.4
Total	89	100

^a Septicemia was the cause of death in 2 cases of burns and 1 case of sharp force injury.

^b Defense injuries were present in 20 cases.

other tissues of homicide victims. In 55 cases the victim died on the spot while in the remaining 34 cases, despite medical treatment the victims succumbed to their injuries.

5. Conclusions

Of the 89 victims of homicide, 71 were males and 18 were females. On an average, about 17 cases of fatal assault cases were autopsied each year. The commonest age group affected was 21–30 age group (28.1%). The head was found to be the most common site of injury followed by the extremities, abdomen and chest. In 49.4% of the cases, the victims had sharp force injuries while in 34.8% it was due to blunt force injury. Fatal injuries to the head were the commonest cause of death. Homicide by strangulation was seen in 8 cases and involved mostly women. Two cases of female feticide were present. No Dowry deaths were reported. The incidence of homicidal burns was low ($n = 2$, 2.2%). In 61.8% of the cases, death was immediate. In 52.8% of the cases the assailant(s) had a pre-planned motive for killing.

Conflicts of interest

None declared.

Funding

No funding received.

Ethical approval

Not applicable.

References

- Menezes RG, Shetty BSK, Kanchan T, Menon A, Monteiro FNP, Nayak VC. Culpable homicide not amounting to murder as a cause of mortality in the district of South Canara – A scenario from South India. In: Toliver RB, Coyne UR, editors. *Homicides: trends, causes, and prevention*. New York: Nova Science Publishers; 2009. p. 185–90.
- Ratanlal R, Dhirajlal KT. *The code of criminal procedure*. 15th ed. New Delhi: Wadhwa and Company Law Publishers; 2001.
- Karlsson T. Sharp force homicides in the Stockholm area, 1983–1992. *Forensic Sci Int* 1998;94:129–39.
- Martin CC, Melki JA, Guimaraes MA. Assessment of methods of homicides in a Brazilian city: a preliminary study. *Forensic Sci Int* 1999;106:19–25.
- Milroy CM, Ranson DL. Homicide trends in the state of Victoria, Australia. *Am J Forensic Med Pathol* 1997;18:285–9.
- Duflou JA, Lamont DL, Knobel GJ. Homicide in Cape Town, South Africa. *Am J Forensic Med Pathol* 1988;9:290–4.
- Lemard G, Hemenway D. Violence in Jamaica: an analysis of homicides 1998 to 2002. *Inj Prev* 2006;12:15–8.
- Tardiff K, Gross EM, Messner SF. A study of homicides in Manhattan, 1981. *Am J Public Health* 1986;76:139–43.
- Agnihotri AK, Lalwani S, Talreja A, Murty OP. Fatal firearm injuries—3 years review. *J Forensic Med Toxicol* 1999;16:47–51.
- Kumar TS, Kanchan T, Yoganarasimha K, Kumar GP. Profile of unnatural deaths in Manipal, Southern India 1994–2004. *J Clin Forensic Med* 2006;13:117–20.
- Dikshit PC, Kumar A. Study of homicidal deaths in Central Delhi. *J Forensic Med Toxicol* 1992;4(1):44–6.
- Sinha US, Kapoor AK, Pandey Surendra Kumar. Pattern of homicidal deaths in SRN Hospital's Mortuary at Allahabad. *J Forensic Med Toxicol* 2003;20:33–6.
- Ghangale AL, Dhawane SG, Mukherjee AA. Study of homicidal deaths at Indira Gandhi Medical College, Nagpur. *J Forensic Med Toxicol* 2003;20:47–51.
- Mohanty MK, Mohanty S, Acharya S. Defence wounds in homicidal deaths. *J Forensic Med Toxicol* 2004;21:34–6.
- Srivastava AK, Das-Gupta SM, Tripathi CB. A study of fatal strangulation cases in Varanasi (India). *Am J Forensic Med Pathol* 1987;8:220–4.
- Singh AJ, Arora AK. Status of sex determination test in North Indian Villages Indian. *J Community Med* January–March, 2006;31(1).
- Kumar V. Burnt wives – A study of suicides. *Burns* 2003;29:31–5.